(19) World Intellectual Property **Organization**

International Bureau





(43) International Publication Date 3 November 2005 (03.11.2005)

PCT

(10) International Publication Number WO 2005/103080 A3

A61K 35/14, (51) International Patent Classification⁷: 38/16

(21) International Application Number:

PCT/US2005/013222

(22) International Filing Date: 20 April 2005 (20.04.2005)

(25) Filing Language:

(26) Publication Language: English

(30) Priority Data:

60/564,166 21 April 2004 (21.04.2004)

(71) Applicant (for all designated States except US): ALBERT EINSTEIN COLLEGE OF MEDICINE OF YESHIVA UNIVERSITY [US/US]; 1300 Morris Park Avenue, Bronx, NY 10461 (US).

(72) Inventors; and

Inventors/Applicants (for US only): FRIEDMAN, Joel, M. [US/US]; 132 Mayhew Drive, South Orange, NJ 07079 (US). NAVATI, Mahantesh, S. [IN/US]; 1560 Pelham Parkway South, Apt. 5P, Bronx, NY 10461 (US).

(74) Agent: MILLER, Alan, D.; Amster, Rothstein & Ebenstein LLP, 90 Park Avenue, New York, NY 10016 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 22 December 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: STABLE OXIDATION RESISTANT POWDERED HEMOGLOBIN, METHODS OF PREPARING SAME, AND USES THEREOF

(57) Abstract: The present invention provides oxygenated hemoglobins in powdered form and methods of preparing a powdered form of a protein, such as hemoglobin, which comprise (a) mixing a solution of the protein with inulin, and optimally with a reducing sugar such as glucose or tagatose, and (b) drying the mixture. Also provided are blood substitutes formed from reconstituted powdered hemoglobins, and methods of treatment using the blood substitutes.

